envisionTEC

Jewelry Manufacturer Upgrades to EnvisionTEC 3D Printers for Quality Results

Chandlers Manufacturing Jewellers PTY Ltd (Chandlers) is situated at the pivot building, Monte Casino Boulevard, Johannesburg, South Africa. The business has been operating for more than 25 years and during the past decade has grown to a staff of 40+ individuals.

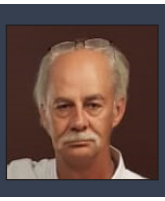
Chandlers was founded as a manufacturer after its founder noticed that there was a lack of qualified hand craftsmen locally with the skills to provide retailers with the quality product they demanded.

Initially established to supply manufacturing services to retail clients, today the business has expanded its offering to group stores, wholesalers, fellow jewelry manufacturers and private clients. Chandlers now offers services such as 3D CAD design, printing, mold making and casting.

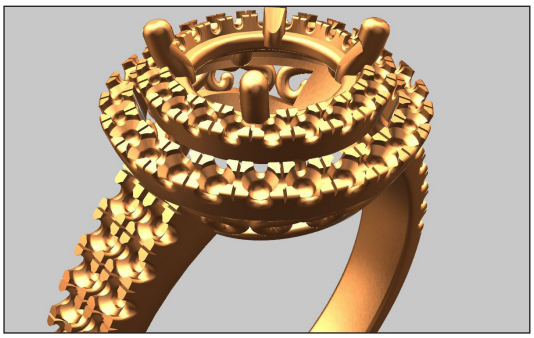
Why move to 3D printing?

Coming from a background in the industry, Rodney Chandler was aware of the limitations of traditional hand-made models and saw the advantages new digital approaches brought to the industry.

Chandlers was pioneering, embracing 3D printing around 2011 when it was realized that it was possible to 3D design and print extremely complex pieces with high accuracy. They also identified the growth in popularity of specialized 3D CAD software such as Rhino and Zbrush and their ability to build accurate organic shapes.



"3D Design combined with 3D Printing is the only way to stay competitive and ahead of the competition" - Rodney Chandler, Director, Chandlers Manufacturing.



Chandlers builds complex jewelry pieces in CAD for its customers. Extremely small details are reproduced.

Rings cast from the highly accurate 3D prints.

Chandlers Manufacturing

Industry:
Jewelry/Manufacturing

Machines:
Perfactory Aureus

Materials:
EC500, EPIC

Why EnvisionTEC?

Prior to discovering the EnvisionTEC range of jewelry focused solutions, Chandlers had invested in a Solidscape 3D printer on the understanding that it was the only manufacturer with a castable material. This of course turned out to be false. Though the technology in place was supposed to be the ideal solution, the machine actually turned out to be unreliable and slow, which rapidly led to a backlog of commitments to its clients that it couldn't deliver in time.

After experimenting with the Solidscape machine it was a meeting at a jewelry show in Bangkok that opened Rodney Chandlers eyes to EnvisionTEC, the quality of the 3D printers and the range of Jewelry focused materials.

He said, **"After what I saw, I was instantly sold on the machine, I knew we had to get an EnvisionTEC."**

What Rodney witnessed was an EnvisionTEC Aureus 3D printer printing in Photosilver. The print demonstrated the extremely fine detail available from the printer. The mold was then injected with a polymer and pressure treated to remove any bubbles.

Rodney explained, **"The detail was incredible, it was so fine that if the model had a scratch on it, then it was visible on the avatar which was now ready to tree up and cast."**

It was obvious that the quality of the EnvisionTEC machine, its speed, and accuracy were superior to the current machine. After returning from the Bangkok show and discussions with distributor Rapid 3D who became an EnvisionTEC distributor. They returned the Solidscape machine and ordered an Aureus. They were not the only manufacturers to make the move, several others followed.

"There is absolutely no competition in my mind, our old machine was more suited for hobbyists. It was slow and unreliable, and not a patch on the EnvisionTEC we have now." - Rodney Chandler, Director, Chandlers Manufacturing.

The Results:

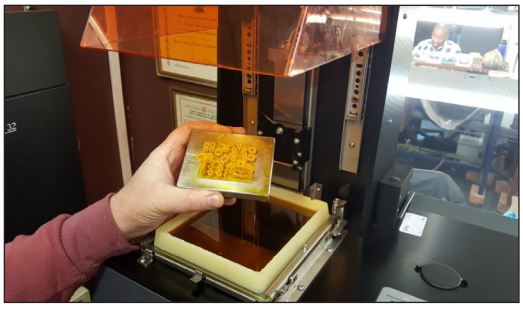
Chandlers and its customers are using a variety of jewelry specific packages to produce designs, these include Rhino, Rhino Gold, Z Brush and also a number of freelance designers using Gemvison Matrix. The STL agnostic nature of the EnvisionTEC 3D printers ensures that files produced from any of the packages are compatible. For customers this means that designs can be submitted and produced no matter what their package preference.

Chandlers now runs three EnvisionTEC Aureus 3D printers. Two are dedicated to running the EC500 material with the third predominantly printing models in EPIC.

Flexibility:

The EnvisionTEC range of jewelry materials provides a multitude of properties for different production uses. This has allowed Chandlers to switch, for example, from the production of molds for cold molding, to printing castable models extremely quickly as and when the need arises.

3D Printing allows initial ideas to be converted quickly into digital files.



Settings and rings are quickly printed off.

Multiple 3D prints are produced at the same time.

Once printed, objects produced in EnvisionTEC's castable materials can be easy attached to a sprue for direct casting.

"After being in the Jewelry Manufacturing industry for some 38 years now, I can honestly say I still get excited at what can be produced with the EnvisionTEC."
- Rodney Chandler, Director, Chandlers Manufacturing.

Speed and accuracy:

The move away from hand modelling and implementation of EnvisionTEC 3D Printing technology has had a dramatic effect on the speed of production. Chandlers has been impressed with the ability to quickly design and produce fully castable models in 24 hours. This fast turnaround in the speed of production has allowed the business to adjust and expand its ranges faster than ever before.

"The fact you can do a CAD model, print it the same day, and have a cast working model the following day is a big advantage." - Rodney Chandler, Director, Chandlers Manufacturing.

The 3D printers also allow the team to produce extremely accurate models and work within tight tolerances for castings. This accuracy has also allowed them to more precisely calculate metal weights, stone sizes and quantities.

Finally, the speed and accuracy of the EnvisionTEC 3D technology has reduced the man hours required to produce items, with models needing less finishing. Additionally there has been a large reduction in the waste over traditional methods.

"I would recommend EnvisionTEC to anyone wanting high quality prints and reliable hardware." - Rodney Chandler, Director, Chandlers Manufacturing.

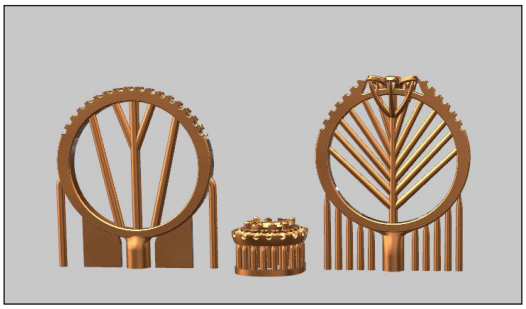
Growth:

The speed of the machines has allowed the business to grow, now able to fulfil more orders than before. Chandlers can now set 3 times the volume of settings without the need to increase staff numbers. The knock on effect has been that the implementation of EnvisionTEC printers has helped them to become more competitive.

"3D Design combined with 3D Printing is the only way to stay competitive and ahead of the competition" said Rodney.

The quality of the workmanship and fast turnaround has built Chandlers' reputation in the market and pushed it ahead of the competition.

Rodney Chandler with the Aureus printers.


CAD designs are built individually then software such as EnvisionTEC's custom RP is used to arrange these on the print bed to maximize yield per print.


This allows multiple jobs to be printed at the same time, in this case in EnvisionTEC's EPIC material.


Post casting the accuracy of the original print means detail is retained and much less finishing is required.

EnvisionTEC Materials, the perfect choice for Jewelry

EnvisionTEC is a leading choice among goldsmith jewelers, and custom and large manufacturers for 3D printing jewelry patterns for casting. EnvisionTEC's 3D professional grade printers and materials offer superior detail, precision and a smooth surface finish that requires less finishing.

Highly detailed filigree and accurate settings are routinely produced with little or no adjustment to the machine. Models are produced at extremely high speed, especially when using EnvisionTECs patented cDLM technology that is unparalleled in the industry.

EnvisionTEC DLP technology provides accuracy beyond laser or printing alternative technologies with 15 micron resolution capability as standard. This makes EnvisionTEC 3D printers the perfect choice for micro pave or invisible settings. A large range of materials ensures that no matter what the application you are covered:

- **EC500** - A castable material with moderate wax levels for 3D printing heavier jewelry pieces of up to 20 grams finish weight.
- **WIC100G** - A popular value material in the EnvisionTEC portfolio. Containing 20% powder wax content.
- **RC Series** - A series of high-temperature resins for building tough and stiff parts at very high resolutions.
- **PIC 100 Series** - A popular production casting material, allowing for exceptional detail and surface finish. PIC is recommended for pieces up to 5 grams finish weight.
- **Easy Cast 2.0 C** - A breakthrough material for the high-speed printing of a castable photopolymer with the highest wax content available in 3D printing.
- **EPIC** - A 3D printing material that contains 8% liquid wax for lower thermal expansion during burnout.
- **EC3000** - A high wax content material that delivers exceptionally crisp details and a smooth surface finish.
- **Photosilver** - A high temperature resistant material for the production of vulcanized rubber molds.
- **HTM140 V2** - A high temperature molding material for producing non-metal masters.
- **QView** - A resin that is ideal for providing fast design verification models.

"3D Design with 3D printing is the only way now to be, and stay competitive."
- Rodney Chandler, Director,
Chandlers Manufacturing.

Partners:

Special thanks to South African distribution partner Rapid 3D and thank you to Rodney Chandler for his extensive support in the making of this case study. For more information on Rodney and his services call: 0027 826 060 493.

About EnvisionTEC:

EnvisionTEC is a leading global provider of professional-grade 3D printing solutions. Founded in 2002 with its pioneering commercial DLP printing technology, EnvisionTEC now sells a range of printer configurations based on six distinct technologies that build objects from digital design files. The company's premium 3D printers serve a variety of medical, professional and industrial markets, and are valued for precision, surface quality, functionality and speed.

ENVISIONTEC, INC.
Dearborn, USA
Phone +1-313-436-4300

ENVISIONTEC GMBH
Gladbeck, Germany
Phone +49 2043 9875-0

ENVISIONTEC UK
Stoke-on-Trent, UK
Phone +44 (0)1782 418040

ENVISIONTEC Asia
Shanghai, China
Phone +86 186 163 10393